



Our

PROPERTY OF
Bureau of Land Management
D S C LIBRARY

APRIL 1959

Vol. 8 • No. 4

PUBLIC LANDS

BUREAU OF LAND MANAGEMENT



038

5UL-4-

9-13-48

OUR PUBLIC LANDS . . .



Issued quarterly by

UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT
Washington 25, D. C.

*The printing of this publication has been
approved by the Director of the Bureau
of the Budget, February 19, 1957*

DEPARTMENT OF THE INTERIOR

Fred A. Seaton, Secretary

BUREAU OF LAND MANAGEMENT
Edward Woolley, Director

BUREAU OF LAND MANAGEMENT ORGANIZATION

Director	Edward Woolley
Associate Director	Earl J. Thomas
Assistant Director	Charles P. Mead
Assistant Director	James P. Beirne
Assistant to the Director	Charles R. Drexilius
Assistant to the Director	C. Edward Hoyt
Appeals Officer	Abe H. Furr
Cadastral Engineering Staff Officer	Earl G. Harrington
Forestry Staff Officer	Walter H. Horning
Lands Staff Officer	Harold Hochmuth
Minerals Staff Officer	Max Caplan
Range Management Staff Officer	Gerald M. Kerr
International Cooperation Officer	Byron C. Denny
Information Officer (Acting)	Dwight F. Rettie

AREA ADMINISTRATORS

Area 1, James F. Doyle	Portland, Oregon
Area 2, Neal D. Nelson	Salt Lake City, Utah
Area 3, Westal B. Wallace	Denver, Colorado
Area 4, Jesse M. Honeywell	Juneau, Alaska

*Materials in this publication are not
copyrighted and may be reprinted without
permission. Mention of the source will
be appreciated but is not required.*

"Conservation is a state of harmony between men and land. By land is meant all of the things on, over, or in the earth. Harmony with land is like harmony with a friend; you cannot cherish his right hand and chop off his left. That is to say, you cannot love game and hate predators; you cannot conserve the waters and waste the range; you cannot build the forest and mine the farm. The land is one organism. Its parts, like our own parts, compete with each other and cooperate with each other. The competitions are as much a part of the inner workings as the cooperations. You can regulate them—cautiously—but not abolish them."

(From "Round River—From the Journals of
Aldo Leopold," edited by Luna B. Leopold,
Oxford University Press, 1953.)

CONTENTS

ARTICLES

YEAR OF PROGRESS	3
MEETING ALASKA'S FIRE CONTROL NEEDS	4
HOW WE ACQUIRED OUR LANDED ESTATE—PART 2 by KARL S. LANDSTROM, <i>Lands Officer</i> , BLM	6
AERIAL PHOTOGRAPHY—MODERN SURVEY TOOL	8

FEATURES

ACTIVE ACRES	10
Grazing Land Fee	
New BLM Bulletin	
Applications Rejected	
Changes in Oil Lease Procedure Proposed	
AREA OF FEDERALLY OWNED LANDS	16

COVER

Aerial photography and the science of photogrammetry are doing a bigger and bigger job in public land management. The cover photo is a remarkable example of single photo relief. Taken in Alaska, the sharp relief of the ridges seems to stand out clearly against the lowlands. This photo still shows the printing marks and identifying numbers used in aerial photographic work. For more about aerial photographs see page

YEAR OF PROGRESS

The increasing use, importance, and values of the Nation's public lands and resources are reflected in last year's operations of the Bureau of Land Management, according to the annual report of the Director.

Receipts set an all-time record of approximately \$123,924,000. This amounted to an 11 percent increase over receipts of \$109,850,654 during fiscal year 1957. BLM also received \$3,460,851 in rents and royalties from mineral leasing on the Outer Continental Shelf, bringing gross BLM receipts for 1958 up to a rounded total of \$127,385,000—an increase of more than \$15 million over 1957's total of \$112,059,358.

Total receipts by the Bureau of Land Management since the Bureau's creation in 1946 now have rolled over the \$1 billion mark. The billionth dollar was taken in early during fiscal year 1958 and by the end of the fiscal year on last June 30 total BLM receipts in 12 years of operation reached nearly one billion 77 million dollars.

Congressional appropriations for Bureau operations during fiscal year 1958 amounted to \$22,700,000 for the management of lands and resources, \$5,480,000 for construction, and \$564,846 for range improvements.

BLM receipts for 1958 were distributed as fol-

(Continued on page 11)

SUBSCRIPTION PAID UP?

WANTED: Subscribers

No Experience Necessary

If you are already a subscriber to OUR PUBLIC LANDS won't you please clip out and pass this subscription order along to a friend whom you think would like to receive and read these issues. Or would you like to give a gift subscription to someone, or to your school, or library?

(cut along dotted line)

ORDER FORM

To:
Superintendent of Documents
Government Printing Office
Washington 25, D.C.

For Use of Supt. Docs.

Enclosed find \$ _____ (check or money order). Please enter my subscription to OUR PUBLIC LANDS for one ☐, two ☐, or three ☐ years. (Yearly rates: 60¢ domestic; 85¢ foreign.)

Name _____

Street _____

City, Zone, and State _____

MEETING ALASKA'S FIRE CONTROL NEEDS



THE fire loss in Alaska of 5 million acres of forest and range cover in 1957 with loss of other natural resources, focused attention on the fire control problems in the 49th State. That 5 million acres is just about equal to the size of the States of New Jersey or Massachusetts. A 5-year work plan is scheduled for increasing basic fire protection organizations and facilities. The Bureau of Land Management now views the problem of protecting 225 million acres of Alaska public domain with some optimism.

The 5-year plan for expanded program provides for orderly increases in personnel, facilities, and equipment. The larger, basic organization while removing many of the obstacles to successful fire control, will not alone solve the fire problem. Improved techniques in all phases of fire protection are the essential tools of success. Determination of those techniques best suited to Alaska is being evolved from both applied and basic research which is underway.

The 225 million acres of vegetated public domain lands and dependent resources have for the past 18 years suffered an average annual loss in excess of a million acres (nearly $\frac{1}{3}$ larger than the State of Rhode Island). Alaska cannot stand this depletion of resources upon which depend its present and future industrial growth and stability. Resource losses are long-term in nature and their effects insidiously accumulate. Fire losses cannot be prevented completely since lightning causes 24 to 25 percent of the fires. Yet, losses can be held to a much lower acceptable and economic mini-

mum. The goal is thus defined.

Problems of achievement of this goal fall generally into five categories:

1. Alaska's long fire season and highly combustible fuels;
2. Alaska's vast size and general remoteness;
3. The need for reduction of fires through organized prevention efforts;
4. The need for an improved basic fire organization capable of efficient and effective expansion to meet abnormal fire situations, and
5. The need for improved techniques in rapid detection and suppression of fires.

Perhaps some day, the science of weather modification will allow us to influence some of the factors that contribute to bad fire seasons. Remoteness and size are partially compensated by the Bureau's use of aircraft. Thus, fire prevention and improved detection and suppression techniques remain as the problem upon which the Bureau is devoting most emphasis today.

The field of public fire education and prevention is broad and fertile. People still cause 75 percent of Alaska's fires! In this phase, newspapers and radio stations are cooperating in spreading fire news and warnings. The Bureau annually talks its way through Alaska seeking better public awareness and assistance in fire prevention.

Campground and picnic areas have been developed—not only to enable the public to better enjoy its lands and resources, but to concentrate fires in areas of relatively lower hazard. Local civic groups are engaged in sponsoring the "Keep Alaska Green" program as part of the nationwide "Keep America Green" effort.

All these programs are aimed at making the public aware of the damage being wrought to their natural resource wealth by a thoughtless few. Public apathy to the serious inroads fire has made in their resource wealth today and in the future must be stopped. It is only under conditions of complete understanding and cooperation by the public that a fire organization can hope to achieve real success in fire control.

There remains the problem of getting better and faster suppression action. Speed and timing are the essence of effective fire control. Prompt detection followed by immediate suppression action achieves quick control with minimum effort, ex-

LONG SUPPLY LINES from base to fire crews makes fire fighting job difficult. Helicopters often ferry men and equipment to and from Alaska fires.



pense, and resource loss.

The Bureau, through the use of its own planes and the cooperation of all civilian and military pilots, has a broad aerial detection system which covers much of Alaska each day. Even so, the need is felt for a specialized patrol following lightning storms and for areas off the usual flight paths.

The Bureau leased a World War II fighter plane to determine whether a fast ship such as this could be successfully used in high altitude, and broad area coverage, to detect and report fires. The high altitude phase was found impractical, but the speedy plane in the hands of pilots knowing the country and experienced in fire observation has proved a definite asset to rapid, accurate fire detection.

Experiments begun in 1957 in aerial bombing of fires with a fireproofing chemical (borate) were continued this year. Last year a plane was equipped with two 300-gallon wing tanks. It was found that the ground pattern of the drop was too broad and too light. This year two types of planes were contracted, one with a bomb bay mounted 600-gallon tank, and the other carrying a 750-gallon belly pod.

The chemical was mixed with water to form a mixture containing about 3.7 to 3.9 pounds of borate per gallon. Upon call, the loaded planes took off for the fire and there made their runs over the fire at 75 to 100 feet at speeds of 100 to 125 miles per hour. At just the right time the pilots trip the hydraulically operated gate releases and dump the load in an average of two seconds. The mixture atomized and, spread by the planes speed and height, dropped a pattern some 50 feet wide and 750 feet long.

The mixture provides three specific actions in hitting the fire (1) the water serves as a cooling, wetting agent; (2) the 10 to 12 pound weight per gallon delivered at 100 m.p.h. acts like a heavy "swatter" in knocking flames and fuels to the ground; and (3) the borate clings to the vegetation and as it dries out, forms a highly fire resistant coating.

As an example of the efficiency of this method of attack, 13 fires were completely controlled with it. Partial control of many other fires was accomplished before the first ground crew of fire fighters arrived. An average of about 10 tons of borate were dropped per fire.

The success attained by use of the aerial attack on fire has established the value of the borate plane to a degree that assures its continuing operation in subsequent fire suppression planning.

Smokejumper operations will be initiated in Alaska in 1959 with the arrival of the first 16-man group on June 1. Here again is a further aerial operation to back up the patrol and borate drops. The Bureau's planes will continue to make aerial cargo drops and leased helicopters will play a definite continuing role in crew transportation.

(Continued on page 13)

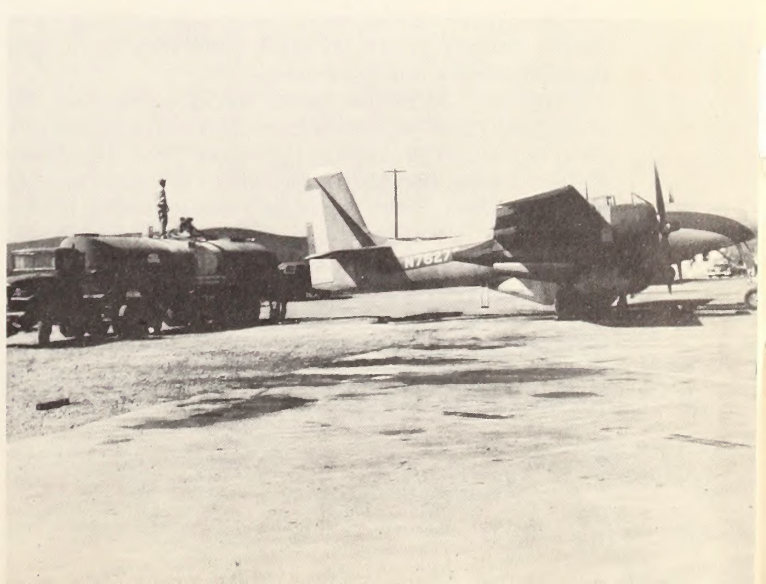


MAN CAUSED FIRES still account for 75 percent of Alaska fires. Public campsites localize land use and reduce the fire danger.

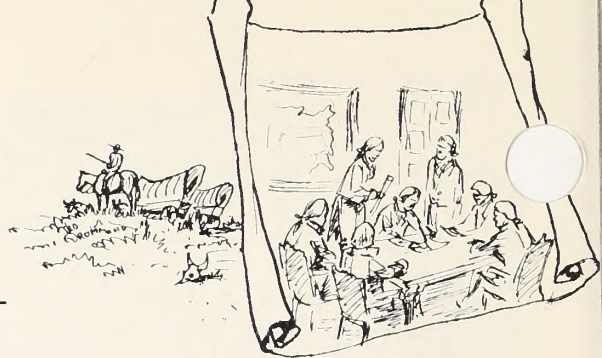


FIREPROOF ARMOR—260 tons of it—waits to be mixed and dropped on Alaska fires.

SPEEDY ATTACK by borate-loaded planes can dump 800 gallons at 300 miles per hour. Fast attack means small fires.



HOW WE ACQUIRED OUR LANDED ESTATE—PART 2



by KARL S. LANDSTROM, *Lands Officer, BLM*

Florida was claimed by Spain by discovery and exploration.

Spain ceded Florida to Great Britain in 1736, but in 1783, after the conclusion of the treaty between the United States and Great Britain, Florida was ceded back to Spain. The boundaries of Florida were in dispute between Spain and the United States.

President James Madison issued a proclamation in 1810 taking possession of the east bank of the Mississippi River under the authority of the treaty of purchase with France. The proclamation left the question of ownership for future settlement. After a series of incidents, John Quincy Adams for the United States and Don Luis de Onís for Spain signed a treaty of cession of Florida to the United States in 1819.

The Florida purchase cost the United States \$6,674,057 for 46,144,640 acres of public domain—about 14 cents an acre.

The Northwest Territory was established as part of the United States by the treaty with Great Britain in 1846.

Long before the purchase of Louisiana, the interests of the United States had been directed toward the unknown interior country west of the Mississippi. Several overland journeys were begun, but none was brought to a conclusion.

The northwestern coasts had been visited by ships of several countries. Capt. Robert Gray, an American, discovered the mouth of the Columbia River and sailed many miles upstream.

The American claim to "Oregon Territory" was based upon Captain Gray's discovery and later expeditions by land and water.

President Jefferson asked the Congress in 1803 to appropriate \$2,500,000 for an overland expedition, which was begun the next year by Meriwether Lewis and William Clark. Furtherance of the American claim was the prime motive of the expedition. Exploration of the newly purchased Louisiana Territory was also an objective.

The Lewis and Clark expedition began by water from the mouth of Wood River on the Illinois bank of the Mississippi, opposite the mouth of the Missouri River. The party reached an Indian village at Mandan by October 26. There, on the

north bank of the Missouri, a fort, called Fort Mandan, was erected.

The route followed in 1805 passed through the lofty Bitter Root Range, down the Clearwater River to its junction with the Snake River, and down the Snake to the Columbia River. Captain Clark wrote that on November 7, 1805, they saw for the first time "the object of all our labors, the reward of all our anxieties," the waters of the Pacific Ocean.

After the winter of 1805–1806 at Fort Clatsop, the party arrived at St. Louis on September 23, 1806.

The report, "Brief Account of the Lewis and Clark Expedition," published in 1905 and reissued by the Bureau of Land Management, characterizes it as influencing greatly subsequent political acts that affected the ownership of the Oregon Territory.

Russia at that time had an undefined claim to territory in what is now Alaska. By treaty in 1824, the United States recognized Russian sovereignty over the northwestern coast from latitude 54°40' north to the North Pole. Great Britain later confirmed with Russia by treaty in 1825 that Russian sovereignty extended northward from latitude 54°40'. The eastward extent of Russian sovereignty was defined with Great Britain as the present eastern line of Alaska.

Sovereignty over the land south of latitude 54°40' was hotly disputed by the United States and Great Britain. Disputed territory was occupied by both countries.

The northern boundary of the United States was placed by treaty in 1846 at the 49th parallel extended to the middle of a channel that separates Vancouver Island from the mainland, thence southerly along the center of the channel and of the Strait of San Juan de Fuca to the Pacific Ocean. The exact location of the channel referred to was in dispute from 1846 to 1872. An exact location was determined in 1872 by Wilhelm I, Emperor of Germany, who was arbitrator without appeal, agreed upon by the two countries.

The Oregon Compromise established 183,386,240 acres as public domain of the United States. No payment of moneys was involved.

Texas, annexed in 1845, was originally included in French and Spanish possessions. The treaty of purchase of Florida contained recognition by the United States of the present eastern boundary of Texas as the eastern boundary of Spanish possessions.

Mexico obtained her independence from Spain in 1821.

Secretary of State Martin Van Buren in 1829 instructed the United States Minister to Mexico to offer to buy the part of Texas east of the Mueces River. Mexico refused. The Republic of Texas was proclaimed in 1836 and was recognized by the United States in 1837.

Admission of Texas to the United States was soon urged. It became a political issue. A joint resolution for annexation was adopted by the Congress and was signed by President John Tyler in 1845.

The State of Texas succeeded to the ownership of all lands of the former Republic east of the Rio Grande that were included in a region bounded on the east by the Spanish-American boundary as established under the Florida treaty of 1819. These boundaries had been confirmed by a treaty with Mexico in 1828, but they were indefinite. Persons living at Santa Fe, in what is now New Mexico, denied that they were within the State of Texas.

During the Mexican War in 1847, General Stephen W. Kearney, under War Department orders, captured the Mexican province of New Mexico. As military governor, he published a series of laws for the government of the province.

An organic law for the government of the Territory of New Mexico was enacted after 3 years of military government. The law defined the eastern boundary of the Territory at the present eastern line of New Mexico, reducing thus the extent of the claim of Texas. By the act of September 9, 1850, the United States proposed the purchase from the State of Texas of its claim to lands north of latitude $36^{\circ}30'$ and west of the 100th meridian and those north of latitude 32° and west of the 103d meridian. The State accepted, and the purchased property became public domain of the United States.

The lands added by this purchase consisted of 78,926,720 acres of land and water surface, costing \$15,496,448, or approximately 20 cents an acre. These lands are now parts of Kansas, Colorado, New Mexico, and Oklahoma.

The Pacific Southwest, especially the coast of California, was early a matter of jealous attention by several rival countries.

Russians occupied a part of the California coast in 1812 by permission of Spain. A military governor was in command.

President Andrew Jackson proposed in 1835 to Mexico that the Pacific Southwest be sold to the United States. Negotiations failed. John Charles Fremont's overland expedition and Charles Wilkes' voyage under auspices of the

United States added information about this area.

After the terms of the Texas annexation had been accepted by the Republic of Texas, President James K. Polk in 1845 ordered the United States Army to occupy and hold the western part of the Texas claim. Steps were taken to offer to the Mexican Government terms for the acquisition of the disputed western Texas Territory and lands to the west, including the bay and harbor of San Francisco.

War was declared with Mexico on May 13, 1846. After repeated failure of negotiations and resumption of hostilities, a treaty was completed by Commissioner Nicholas P. Trist, on behalf of the United States, at the city of Gaudalupe Hidalgo, Mexico, on February 2, 1848. President Polk proclaimed the treaty on July 4, 1848.

This action resulted in recognition of the western boundaries of Texas and added to the public domain the lands bounded on the east by the Rio Grande River and a meridian extending north, on the north by the 42d parallel, on the west by the Pacific Ocean, and on the south by the national boundary established by the treaty. The area of public domain acquired was given by the Federal Interagency Committee in 1912 as 338,680,960 acres. The cost was \$16,295,149, or approximately 5 cents an acre.

The Gadsden Purchase was completed in 1853 when Franklin Pierce was President.

James Gadsden, the United States Minister to Mexico, entered into the treaty of purchase on behalf of the United States for the purpose of defining more correctly the boundary and making a more regular line between the United States and Mexico.

The boundaries given were the Gila River on the north, the Rio Grande on the east, and a point 20 miles below the mouth of the Gila River, on the Colorado River, on the west. The area of public domain added was 18,988,800 acres (land and water surface). The cost was \$10 million, or approximately 53 cents an acre.

Three parcels of territory, now securely parts of the United States, had been collectively omitted by the various formal treaties of cession or purchase.

One of these areas is what is now western Louisiana, west of the Mississippi River drainage. It was relinquished by Spain in 1819.

Another is an extensive area in Minnesota and the Dakotas. It drains northward through the Red River. It was relinquished by Britain in 1818.

The third area is in central Colorado. It was not included in the Louisiana or Texas Purchases but was covered by a treaty with the Ute Indians in 1868.

The total of original public domain acquired in continental United States from 1781 to 1867 was given by the Federal Interagency Committee in 1912 as 1,462,466,560 acres (land and water area). The aggregate cost was \$77,879,222, or approximately 5 cents an acre.

(To be continued)

AERIAL PHOTOGRAPHY— MODERN SURVEY TOOL



PIONEERS and settlers who opened the vast wilderness which was the United States were often accompanied or preceded by the cadastral (public land) surveyors. Before public land could be taken up by private owners it had to be laid out in the rectangular township and section pattern which is familiar to air travelers across the Middle and Far West.

As settlement moved across the United States public lands in demand for farms and homes, and industrial and commercial development were generally surveyed first. Often this meant only readily accessible lands were surveyed. The remaining unsurveyed lands are now usually in remote areas with deep canyons or steep mountains. Or in Alaska where short seasons and difficult access combine with rugged topography to slow down the work.

Completion of the public land surveys presents an enormous challenge to the cadastral surveyors of today. Personal injuries in hazardous field work have brought into focus the need for developing techniques to reduce the amount of field work necessary. Costs have risen sharply. At times only the exterior boundaries of townships and school sections are being surveyed. Yet in its search for economical procedures, the Bureau of Land Management is bound by the high standards of reliability which its surveys have maintained in the past.

Promising developments, however, have recently arisen in the field of photography. Cheaper, faster, less hazardous, yet still accurate surveys are already being made by the Bureau using new photographic techniques. The application of photography to surveying or mapmaking is known as the science of *photogrammetry*.

Photography and surveying have not in the past been thought of together. But they are not as unrelated as one might think. Directions (which along with distances form the basic components of any survey) have traditionally been determined with a transit. A transit measures angles by comparing lines of sight with a fixed reference or known direction. We do the same thing mentally when we estimate directions, but a transit does it far more accurately in terms of degrees, minutes, and seconds.

The distance or angle between two different objects can also be measured on a photograph, by setting up a simple geometry problem—by using the distance the two points are apart on the negative and the known focal length of the camera, along with the altitude from which the picture was taken. If a camera is used in this way, it is a surveying instrument just as the transit.

Just as the transit is only capable of measuring angles, the camera also only measures angles. Distances must be measured on the ground by tape, chain, rod, bar, or more recently radio and light waves. In practice, the theodolite (a type of transit) permits more accurate measurements than the camera and it also provides a means of relating directions to north. Therefore, it is used initially on the ground to provide an accurate framework for aerial surveys.

As you might imagine there are several advantages to using photographs where possible. One exposure of a negative provides the data for the measurement of many angles. Furthermore, these measurements can be made in the office where bad weather does not interfere with the work. Costs of field work, motor vehicles, and camping equipment can be avoided.

In the case of aerial photography the camera station is located high enough above the ground to give an unobstructed view of the points to be surveyed. (Photographs taken from the ground may also be valuable, but their use is more limited.)

There are difficulties encountered in the application of aerial photography to surveying. Clouds, poor light, dense timber or underbrush, and snow all hinder aerial photo work. However, these frequently can be overcome by taking the photographs at the right time. Sometimes it is better not to use photographs in densely wooded areas.

The scale of an aerial photograph is not constant. It would be if the portion of the earth photographed were exactly flat, the camera axis exactly vertical, and the lenses free from distortion. In that case the scale would be the ratio of the camera focal length to the height of the camera above the ground.

For example, if the camera had a focal length of 1 foot and it was 10,000 feet above the ground, the scale would be 1 to 10,000. That is, 1 inch on the photograph would represent 10,000 inches on the ground. As this never quite works out in practice, we can only say the scale of the photograph is approximately to 1 to 10,000—the variation depending on the changes in elevation on the ground and the amount of tilt. Tilt results from an incorrect angle of the camera; for instance—if the airplane were slightly banked.

The exposure time, or shutter speed, for an aerial photograph is usually $1/200$ th of a second—about two to four times faster than the usual home exposure. The airplane will still move about one foot in this time, but the movement is not enough to blur details in the photograph since the altitude is so great.

Many methods of using aerial photographs for surveys have been developed. The choice of a method for a particular job calls for decisions on cameras, equipment, scale of photography, location of control points, and other matters. These decisions are important and are as much an engineering problem as the type of truss for a bridge span or the location of a highway.

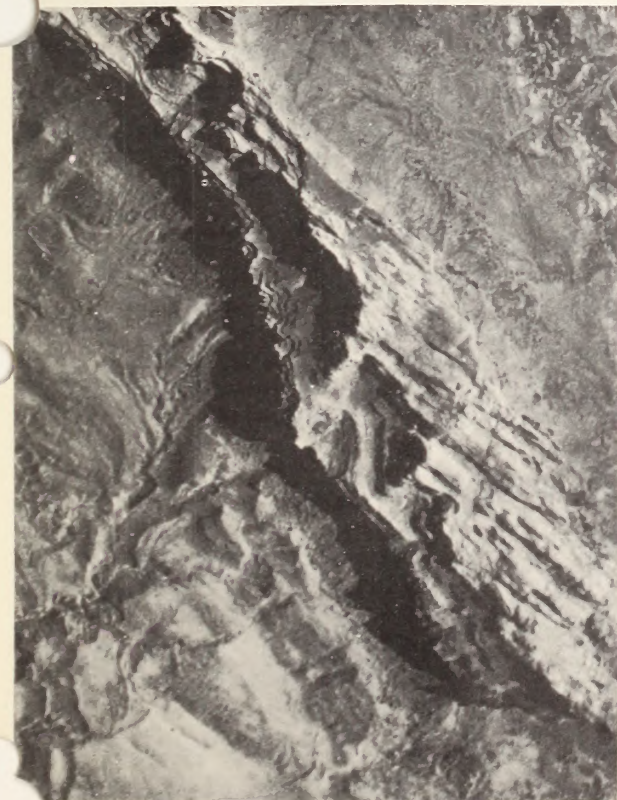
One type of survey to which the aerial photograph is especially well adapted is the location

(Continued on page 13)



SURVEYOR'S FRIEND. Helicopters are the best way to travel in country like this in southern Utah. This is the lower end of the ridge appearing in the stereo pair.

STEREO PAIR. These two pictures were taken about a mile apart at an elevation of 10,000 feet. Viewed through a stereoscope the bold relief is clearly visible. With a little practice you may see these in stereo by cutting them out and looking at them "wide-eyed"—left picture with left eye, right picture with right eye.





GRAZING LAND FEE

The new grazing fee to be charged for the use of Federal range lands during 1959 will be 22 cents per animal-unit-month, a 3-cent increase over 1958.

The new fee is based on average livestock prices at markets in 11 western States during 1958. This system of determining grazing fees has been in effect since January 1, 1958, and has resulted in an increase in both years in which it has been applied.

The new fees apply to all Federal grazing lands administered under section 3 of the Taylor Grazing Act and affect nearly 20,000 stockmen who graze almost 9 million livestock on approximately 160 million acres, in Montana, Idaho, Wyoming, Colorado, New Mexico, Arizona, Utah, Nevada, Oregon, and California.

Grazing charges are based on the number of livestock permitted to use the Federal range and the length of time for which they use it. The new fees charged for each month's use will be 22 cents per head of cattle, 44 cents per horse, and 22 cents for each 5 sheep or goats. No fees are charged for livestock under 6 months old.

NEW BLM BULLETIN

Small Tracts, a new 34-page bulletin describing how people may buy or lease small parcels of Government-owned land, may now be purchased from the Superintendent of Documents, U.S. Government Printing Office, Washington 25, D.C., for 15 cents.

The new BLM Information Bulletin No. 1 deals

with so-called small tracts—a program under which it is possible for people to buy or lease certain small plots of Federal land chiefly valuable for residence, recreation, or business use. These aren't "homesteads" the Bulletin emphasizes, and they are not "free." The tracts are leased or sold at fair market values, often by competitive bidding. The lands are usually located only in the 12 far-western States.

The only lands made available to the public are areas of the public domain, (except those in national forests, national parks, wildlife areas, and certain other reservations) where BLM has examined and classified the lands specifically for small tracts. The Bulletin explains what happens when lands are classified for small tracts, how notices are published in the Federal Register announcing openings, and how people may go about applying or bidding for lands opened.

The new booklet also contains a series of most-often-asked questions and answers about small tracts, along with the complete regulations with which a person must comply.

APPLICATIONS REJECTED

Some 1,100 applications for a total of about one-third of a million acres of California desert lands have been rejected by the Los Angeles Office of the Bureau of Land Management.

The Desert Land Laws provide for the disposition of arid, agricultural public lands to settlers who irrigate them and bring them under cultivation. The Desert Land Act was passed in 1877.

The rejected applications were unacceptable

on several grounds, the Department said. A recent BLM review revealed many applications were filed on lands already withdrawn or classified unsuitable for desert land entry because of lack of water, poor soils, unfavorable topography or a combination of these drawbacks. Moreover, most applicants failed to submit the evidence required under the Desert Land Act and the regulations.

BLM Director Edward Wozzley said the Bureau knows a substantial number of applications were filed for individuals by so-called land locators and filing services.

He said the mass rejection of applications should place the public on notice that the Department refuses to be a party to land speculation schemes by some persons attempting to obtain public lands through tactics that border on the fraudulent.

"It is apparent that some people have attempted to obtain land under the Desert Land Act when they have no intention of using the lands for agricultural purposes," he said.

Director Wozzley emphasized that land locators and filing services are not licensed or controlled by the Government. The Government does not require any applicant to hire such a service, he added, and warned that anyone who is considering hiring them should make certain he is dealing with a reputable organization.

The Bureau said hundreds of people in southern California paid land locators from \$2 to \$10 per acre—or from \$640 to \$3,200—to prepare and file a desert land application.

"The land locators and agents advertise in the Los Angeles papers and apparently attract many clients who are not familiar with farming or the requirements of the Desert Land Act," Director Wozzley said. "The advertisements draw the unsuspecting by creating the impression that public land may be purchased for \$1.25 per acre. This sum is required as payment under the Law, but people generally do not realize that the land must first qualify and be classified for irrigated agricultural development and that total expenditures of \$20,000 to \$50,000 may be necessary to prepare the land for farming."

The shore line of Lake Michigan, the only one of the Great Lakes which is entirely within the United States, is approximately 1,304 statute miles, of which 381 miles border on Wisconsin, 823 on Michigan, 60 on Illinois, and 40 on Indiana.

As of December 31, 1955, there were an estimated 390,965 miles of railways in the United States.

The mainland tidal shore line of the State of California is approximately 1,264 miles long.

YEAR OF PROGRESS

(Continued from page 3)

lows: \$46,605,380 to 27 public land States, of which \$11,635,514 went to the 18 western Oregon timber land counties; \$47,088,978 was deposited to the Reclamation Fund; \$29,425,662 went into the General Fund of the Treasury; \$3,262,029 was transferred to other Government agencies; \$315,965 was earmarked for Indian Trust Funds; and approximately \$686,713 was returned to the grazing districts for range improvements.

BLM receipts came principally from the following sources: Mineral leasing, \$95,369,102; timber sales, \$24,657,212; sales of public lands, \$3,035,139; grazing privileges, \$2,763,320; fees and commission, \$1,184,382; rights-of-way, \$105,251; and \$269,688 from all other sources.

Major developments in BLM program operations included the adoption of new regulations for oil and gas leasing on Federal wildlife lands. The new rules forbid all leasing on wildlife refuges except for drainage, but will permit leasing on other wildlife lands where oil and gas development will not endanger the value of the lands for wildlife purposes. The new regulations will allow mineral development while at the same time fully protect valuable wildlife resources and lands.

In response to a devastating fire season in calendar year 1957, BLM took major steps to improve its fire control program. Innovations adopted included: a high-speed aerial patrol, dropping of chemical fireproofing foams on fires from airplanes, and the installation of a fire danger rating system.

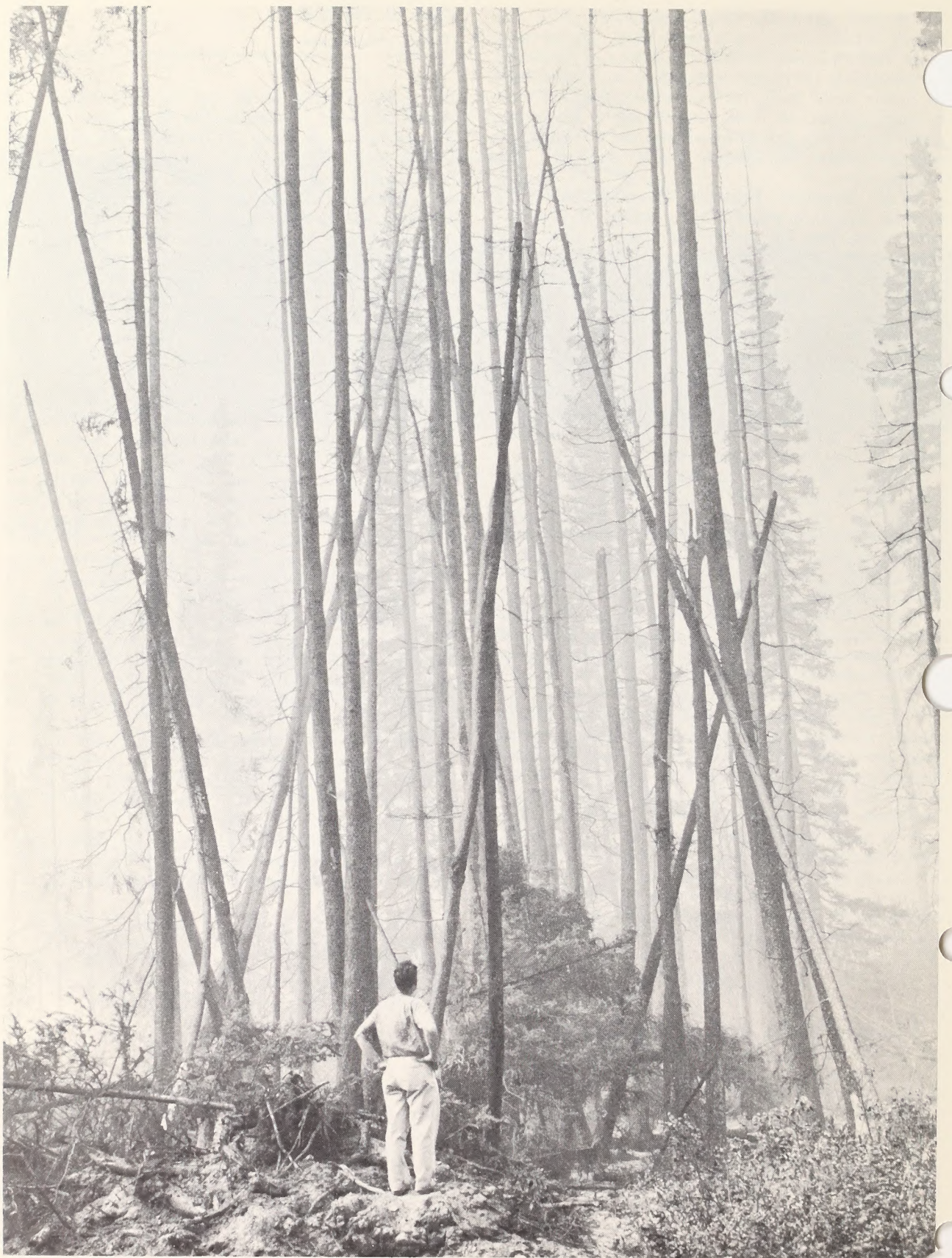
Action was also taken during the year to open some 20 million acres of lands in far-northern Alaska to mining and mineral leasing. In addition, about 16,000 acres in the Gubik Gas Field were leased competitively.

Other accomplishments in range and forest management, public land surveys, land use, and resource management are also described in the report.

The annual report of the Director is published as part of the Annual Report of the Secretary of the Interior. Copies are available from the Superintendent of Documents, U.S. Government Printing Office, Washington 25, D.C., at \$1.50. **End**

The highest point in the State of Wyoming is Gannett Peak (El. 13,785 feet); the lowest point in Wyoming is along the Belle Fourche River (El. 3,100 feet).

In 1900 the United States used an estimated 40.19 billion gallons of water daily. In 1955 approximately 262.04 billion gallons of water were used daily.



ALASKA'S FIRE NEEDS

(Continued from page 5)

Throughout the summer the Bureau of Land Management collected fire weather data at several stations. These data were forwarded to the Division of Fire Research, Forest Service, in Missoula, Mont., where they are being analyzed to determine the bases for developing a Fire Danger Rating System for Alaska. Danger Meters and Burning Indices now used in other States have proved invaluable as a way to measure the danger of fire. Such a system is needed not only to alert fire control officers, activate prefire plans, and assist suppression crews, but also to inform the public.

The Bureau also has two portable weather stations assigned to fires all summer. The observers maintained 24-hour records, kept on an hourly basis, coordinating weather data with fire behavior, spread, and smoke characteristics. These data correlated with our Fire Danger weather and U.S. Weather Bureau records will provide further help in formulating and interpreting a Danger Rating System.

During the 1958 fire season, many organizational and procedural improvements were effected as a result of the 1957 experience. More effective work was done as a result. Perhaps not realized by many is the fact that the 1958 fire year was potentially a worse fire year than 1957. The interior is suffering from a prolonged drought with precipitation for the 2 years being 50 percent normal. Many lakes dried up and the muskeg and tundra areas were dry to depths of 2 and 3 feet.

The fire crews experienced abnormal difficulty in mopping up fires because of the great depths to which even small fires burned in a short time. The real "break" this year was the cessation of lightning storms between June 10 and July 4, thus allowing crews to stay abreast of the fire problem. Otherwise, Alaska would have had another 1957. As it was, the 1958 Alaska fire losses will involve burn of approximately 350,000 acres—a substantial reduction from the 5-million acre burn of 1957.

The job and responsibilities for effective fire protection in Alaska will in no way be lessened by the pending transfer during the next 25 years of some 103 million acres of Alaska's public lands into State ownership. Fire is no respecter of property boundaries. The land and resources in all ownerships in Alaska are the base upon which the future growth of the State depends. Resources destroyed by fire on federally owned lands will not be available to the new State or to the development which statehood will bring.

The time for action is now.

End

AERIAL PHOTOGRAPHY

(Continued from page 9)

of meander lines (water boundaries). The meander line, itself, does not constitute a property boundary, so the same precision is not required as in the establishment of section corners. The kind of photographs taken by the Production and Marketing Administration of the Department of Agriculture are adequate for this purpose, which means that coverage is available over much of the United States. The adjustment of shorelines of bodies of water to a plotted drawing of the boundaries of a section is a relatively simple matter (see the illustration on page 14).

To be able to replace the slow and costly process of meandering on the ground is a notable advance. The success of the procedure has now officially been recognized in the Bureau. It has been officially adopted as the standard procedure for determining water boundaries in the future.

One of the intriguing developments in photogrammetry has been the adoption of stereoscopic principles. The principles are not new—most of us have used an old-fashioned stereoscope to see two pictures as one in three dimensions. But now the same thing can be done using special techniques and interpreting equipment to get accuracy comparable to that obtained in ground surveys while using aerial photographs.

To get the accuracy necessary for establishing public land corners or other points where property rights are involved, study of very small details in the photographed terrain is necessary. Only with complete stereoscopic coverage can this be done.

The technique generally used is to take a picture while flying a particular course and then take successive pictures at specified intervals—somewhere near a mile—which overlap each other. The amount of overlap, the flying height, and the course flown must all be carefully controlled.

These pictures are then used in an instrument like that shown in the drawing at the beginning of the article, called a first order stereoplotting instrument. The photographs are printed on glass plates and projected in pairs to form a three-dimensional model—much in the fashion of the old stereoscope, but enlarged ten times. Counters and dials provide for measurements to 1/100th of a millimeter. Conversion of these measurements to distances on the ground would ordinarily require much time consuming computation, but it is now being handled with electronic computers.

It is no easy job to determine the correct relationship between objects in aerial photographs and the control points on the ground. These control points are a measured number of degrees north and east of the point chosen as the

starting point of the rectangular system in the particular State involved.

In order to relate control points to objects that show up in 9-inch photographs, it is necessary at times to mark them with cloth panels and photograph them from about 2,000 feet with a 35 millimeter camera. It is then possible to know where the station is on the large photos by its relation to surrounding objects seen on both the large and small photos.

It requires some careful aiming to get a near-vertical photograph of the panels from a moving helicopter. The panels may be of white cloth a yard wide and 10 feet long radiating in three directions from the point. Taking the picture involves leaving the door off the helicopter and leaning out with the camera held against the face, while the pilot banks. (The safety belt should be securely fastened while this is going on!) The camera is aimed down between the side of the ship and the skid.

Once these corners are pinned down on the aerial photographs, skilled photogrammetrists can then construct the survey maps which are a basic tool in the management of public lands.

As a final step, a permanent monument is placed on the ground at the public land corners deter-

mined through photogrammetry.

These monuments are 2-inch iron pipes 30 inches long with a brass cap. The lower end is buried in the ground unless the position falls on solid rock, in which case it is held upright by a mound of stone. It often happens that the corner position is on the side of a cliff or in some other position where it is impossible or impractical to set a monument. If it is, a witness corner is set and the distance and direction made a part of the record. The monuments on the ground form the permanent guide lines for all other survey to determine individual property rights.

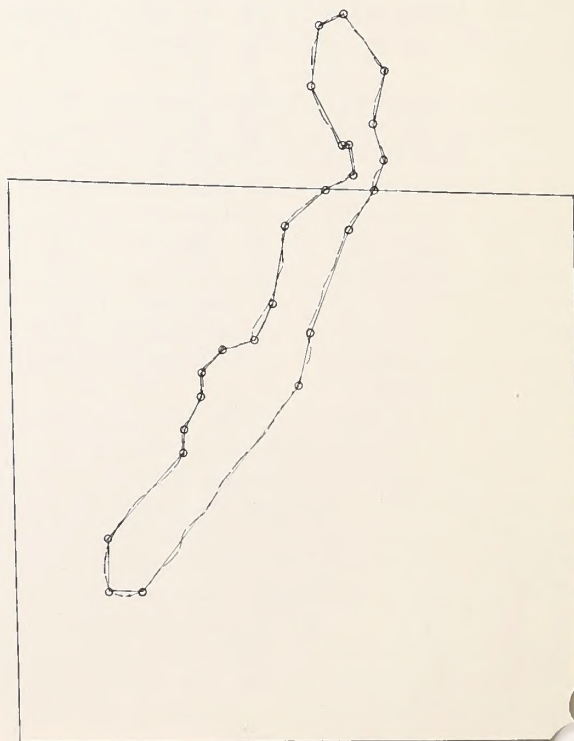
The actual setting of the monument and a few other parts of the process still call for work on the ground by surveying parties.

In the future photogrammetry will certainly play an even larger role in the survey of public lands as the total job moves steadily toward completion.

End

As of December 31, 1955, the total rural and municipal road mileage in the United States was 3,418,214 miles. Twelve States each had more than 100,000 miles—California, Illinois, Iowa, Kansas, Michigan, Minnesota, Missouri, Nebraska, New York, North Dakota, Pennsylvania, and Texas.

MEANDER LINES. The straight lines around the lake represent the official survey lines—drawn in the office instead of laid out in the field. The rectangle corresponds to section lines visible in the aerial photo. The section shown is section 13, township 36 north, range 23 west, 4th Principal Meridian, Minnesota (about 40 miles north of Minneapolis).



CHANGES IN OIL LEASE PROCEDURES PROPOSED

Secretary of the Interior Fred A. Seaton has proposed changes in the oil and gas leasing regulations which would give all interested parties an equal opportunity to file for lands formerly under lease. The changes are also designed to prevent unfair advantage in learning of lands opened to new leases.

The new filing procedure would apply to wildcat lands where an existing lease is cancelled, expired, relinquished, or terminated.

The new system would call for a 15-day period at the beginning of each month during which the previous month's cancelled, relinquished, or terminated leases would be noted on BLM's official records.

No lease application could be made on the lands involved until the 16th day of that month. Beginning on the 16th day and throughout the rest of each month all applications filed on lands involved in such leases that were posted during the first part of the month would be held and treated as if they had been filed simultaneously on the

first day of the next month. Conflicts between applications would be resolved by a drawing procedure.

These proposed changes in the method of filing leasing applications have been designed to afford all interested parties an equal opportunity to obtain leases on Federal lands. Under present procedures, some people are placed at serious disadvantages because lands are available for lease as soon as the records are noted and it is simply impossible for all interested people to be in the office for an equal opportunity to lease the lands.

Under this procedure a list of old leases will be posted in BLM's offices each month and interested people will have at least 2 weeks during which to file an application.

The new system would also eliminate even the remote possibility of people using or unfairly obtaining information about lands open to new oil and gas leases. The present system has placed a premium on making rapid searches of the records each morning so as to find lands available for leasing. The new proposed system would put everyone on an equal footing, and save much wear and tear on the records.

End



U.S. GOVERNMENT PRINTING OFFICE: 1959 O-496786

For sale by the Superintendent of Documents, U.S. Government Printing Office, Washington 25, D.C. - Price 15 cents (single copy).
Subscription price 60 cents a year, 25 cents additional for foreign mailing.

SUPERINTENDENT OF DOCUMENTS
GOVERNMENT PRINTING OFFICE
WASHINGTON 25, D. C.

OFFICIAL BUSINESS

PENALTY FOR PRIVATE USE TO AVOID
PAYMENT OF POSTAGE, \$300
(GPO)

AREA OF FEDERALLY OWNED LANDS

(as of June 30, 1958)

State	Acreage owned by the Federal Government			Acreage not owned by Federal Government	Total acreage of State	Percent owned by Federal Government ¹
	Public domain	Acquired by other methods	Total			
Alabama.....	75,303.0	999,654.9	1,074,957.9	31,614,962.1	32,689,920	3.3
Arizona.....	32,183,138.7	231,496.2	32,414,634.9	40,273,365.1	72,688,000	44.6
Arkansas.....	1,070,928.6	1,908,444.1	2,979,372.7	30,732,627.3	33,712,000	8.8
California.....	44,283,987.5	1,910,816.5	46,194,804.0	54,118,796.0	100,313,600	46.1
Colorado.....	23,116,505.5	899,914.3	24,016,419.8	42,493,660.2	66,510,080	36.1
Connecticut.....		5,422.2	5,422.2	3,129,937.8	3,135,360	.2
Delaware.....		31,855.1	31,855.1	1,234,064.9	1,265,920	2.5
District of Columbia.....		11,211.7	11,211.7	27,828.3	39,040	28.7
Florida.....	324,003.3	3,029,307.7	3,353,311.0	31,374,369.0	34,727,680	9.7
Georgia.....		1,998,494.8	1,998,494.8	35,430,625.2	37,429,120	5.3
Idaho.....	33,896,584.0	589,975.2	34,486,559.2	18,485,600.8	52,972,160	65.1
Illinois.....	736.8	411,512.5	412,249.3	35,386,150.7	35,798,400	1.2
Indiana.....	80.0	334,546.0	334,626.0	22,836,574.0	23,171,200	1.4
Iowa.....	333.7	121,910.1	122,243.8	35,746,556.2	35,868,800	.3
Kansas.....	26,956.0	313,586.1	340,542.1	52,208,577.9	52,549,120	.6
Kentucky.....		973,324.9	973,324.9	24,539,635.1	25,512,960	3.8
Louisiana.....	23,541.3	1,039,662.7	1,063,204.0	27,840,476.0	28,903,680	3.7
Maine.....		124,902.5	124,902.5	19,740,697.5	19,865,600	.6
Maryland.....		223,397.6	223,397.6	6,100,442.4	6,323,840	3.5
Massachusetts.....		58,048.5	58,048.5	4,976,831.5	5,034,880	1.2
Michigan.....	288,054.6	2,949,871.2	3,237,925.8	33,256,154.2	36,494,080	8.9
Minnesota.....	1,361,788.2	1,902,353.0	3,264,141.2	47,941,618.8	51,205,760	6.4
Mississippi.....	13,391.3	1,496,416.2	1,509,807.5	28,728,912.5	30,238,720	5.0
Missouri.....	3,114.9	1,668,210.2	1,671,325.1	42,633,314.9	44,304,640	3.8
Montana.....	25,608,375.5	2,410,200.6	28,018,576.1	65,343,343.9	93,361,920	30.0
Nebraska.....	253,150.8	441,816.2	694,967.0	48,369,353.0	49,064,320	1.4
Nevada.....	61,105,432.3	538,572.8	61,644,005.1	8,620,954.9	70,264,960	87.7
New Hampshire.....		695,302.1	695,302.1	5,075,577.9	5,770,880	12.0
New Jersey.....		97,228.1	97,228.1	4,716,851.9	4,814,080	2.0
New Mexico.....	25,777,479.8	1,715,714.9	27,493,194.7	50,273,845.3	77,767,040	35.4
New York.....		258,518.9	258,518.9	30,425,641.1	30,684,160	.8
North Carolina.....		1,878,575.1	1,878,575.1	29,543,504.9	31,422,080	6.0
North Dakota.....	205,215.5	1,722,212.5	1,927,428.0	42,909,052.0	44,836,480	4.3
Ohio.....	85.0	204,378.8	204,463.8	26,035,536.2	26,240,000	.8
Oklahoma.....	164,019.1	829,108.4	993,127.5	43,186,712.5	44,179,840	2.2
Oregon.....	30,654,337.6	956,149.9	31,610,487.5	30,031,112.5	61,641,600	51.3
Pennsylvania.....		549,407.2	549,407.2	28,279,392.8	28,828,800	1.9
Rhode Island.....		7,793.7	7,793.7	669,326.3	677,120	1.2
South Carolina.....		1,084,004.5	1,084,004.5	18,311,195.5	19,395,200	5.6
South Dakota.....	1,585,815.4	1,614,532.4	3,200,347.8	45,782,692.2	48,983,040	6.5
Tennessee.....		1,569,791.3	1,569,791.3	25,180,288.7	26,750,080	5.9
Texas.....		2,630,049.2	2,630,049.2	166,018,270.8	168,648,320	1.6
Utah.....	36,114,008.8	370,258.4	36,484,267.2	16,217,172.8	52,701,440	69.2
Vermont.....		247,773.6	247,773.6	5,690,146.4	5,937,920	4.2
Virginia.....		2,122,463.7	2,122,463.7	23,409,056.3	25,531,520	8.3
Washington.....	11,350,584.0	1,318,555.4	12,669,139.4	30,073,900.6	42,743,040	29.6
West Virginia.....		933,954.0	933,954.0	14,477,246.0	15,411,200	6.1
Wisconsin.....	11,235.3	1,770,670.7	1,781,906.0	33,229,294.0	35,011,200	5.1
Wyoming.....	29,159,007.3	694,837.6	29,853,844.9	32,549,995.1	62,403,840	47.8
TOTAL.....	358,657,193.8	49,896,204.2	408,553,398.0	1,495,271,242.0	1,903,824,640	21.5
Alaska.....	362,670,637.9	2,775.8	362,673,413.7	2,808,186.3	365,481,600	99.2

¹ Excludes Trust Properties.

Source General Services Administration.